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Desired presentation option:
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Session topic for your talk:
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____ Status of Computational Accelerator Physics
_2__ Particle Tracking and Beam Transport
_1__ Electromagnetics and Particle-In-Cell (PIC) Techniques
____ Simulations Used In Control Systems
____ New Computer Techniques and Environments
____ High Performance Computing
____ Code Updates

METHODS USED IN WARP3d, A THREE-DIMENSIONAL PIC/ACCELERATOR CODE*

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ABSTRACT

WARP3d(1,2), a three-dimensional PIC/accelerator code, has been developed over the last several years and has played a major role in the design and analysis of space-charge dominated beams experiments being carried out by the heavy-ion fusion programs at LLNL and LBNL. Major features of the code will be reviewed, including: residence corrections which allow large timesteps to be taken, field solution with subgrid scale resolution of internal boundaries, and the bent beam algorithm. Emphasis will be placed on new features and capabilities of the code, which include: a port to parallel processing environments, space-charge limited injection, and the linking of runs covering different sections of an accelerator. Representative applications in which the new features and capabilities are used will be presented along with the important results.

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(2) D. P. Grote, A. Friedman, I. Haber, and S. S. Yu, "Three-Dimensional Simulation of High-Current Beams in Induction Accelerators with WARP3d," Proc. Int. Sympos. on Heavy Ion Inertial Fusion, Princeton, Sept. 6-9, 1995; to be publ. in Journal of Fusion Engineering Design, 1996.